

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PC26182A	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No PCT/IB2005/000873	International filing date (<i>day/month/year</i>) 01.04.2005	Priority date (<i>day/month/year</i>) 14.04.2004	
International Patent Classification (IPC) or national classification and IPC INV. C12P13/00 C12P7/40			
Applicant PFIZER PRODUCTS INC.			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 6 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising. a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).			
4. This report contains indications relating to the following items: <div style="margin-left: 20px;"> <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement <input checked="" type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application </div>			
Date of submission of the demand 12.05.2005	Date of completion of this report 28.06.2006		
Name and mailing address of the international preliminary examining authority <div style="display: flex; align-items: center;"> <div> European Patent Office - Gitschiner Str 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax +49 30 25901 - 840 </div> </div>	Authorized officer Ceder, O Telephone No +49 30 25901-		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/B2005/000873

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-15 as originally filed

Claims, Numbers

1-13 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2005/000873

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-13
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

and /or

2. Non-written disclosures (Rule 70.9)

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Documents

1.1 Reference is made to the following document:

1.2 **D1**: Gavagan et al., J. Org. Chem., vol. 63, 1998, 4792-4801

2. Novelty (Art. 33(2) PCT)

2.1 The present application does satisfy the criterion set forth in Article 33(2) PCT because **the subject-matter of claims 1-13 is new** in respect of prior art as defined in the regulations (Rule 64(1)-(3) PCT).

3. Inventive step (Art. 33(3) PCT)

3.1 The present application does satisfy the criterion set forth in Article 33(3) PCT, because **the subject-matter of claims 1-13 does involve an inventive step** (Rule 65(1)(2) PCT).

3.2 Claim 1 is concerned with a method for preparing a (3S)-cyano-carboxylic acid of formula I from a dinitrile of formula II using an enzyme having nitrilase activity.

3.3 Document **D1** is considered to represent the most relevant state of the art and discloses the use of a nitrilase for the regiospecific conversion of 2-ethylsuccinonitrile to 3-cyanopentanoic acid, as its ammonium salt (table 1). Document **D1** does not teach that this reaction can be used to produce a (3S) isomer. The disclosed substrates and products of **D1** (table 1) do also not fall under formula II and I of the application. It is, thus, not obvious that the method used in **D1** could be used to

produce the stereospecific product of claim 1. The skilled person, with the knowledge of **D1**, would, thus, have to use inventive skill to arrive at the method of claim 1. The inventive step of claim 1 and its dependent claims 2-8 is, therefore, accepted.

- 3.4 The inventive step of independent claim 9, as well as its dependent claims 10-13, is also accepted, since the method of claim 9, for the production of (S)-3-aminomethyl-5-methylhexanoic acid is based on the inventive method of claim 1.

4. Further comments

- 4.1 Formula I and II of claim 1 concerns a great number of relatively different compounds. The application as filed does, however, only support and disclose the production of one compound ((S)-3-cyano-5-methylhexanoic acid and its conversion to (S)-3-aminomethyl-5-hexanoic acid) from one substrate (2-isobutyl-succinonitrile). It is not clear that the method of claim 1 would work over the whole ranged of compounds covered by formula II and especially not that it would produce (3S) isomers of all those compounds. The application should, therefore, be limited to the compounds technically disclosed in the application, i.e, those of claims 6 and 9.
- 4.2 On page 3, line 22 it is stated that " R^1 and R^2 are independently hydrogen or C_1 to C_3 alkyl". From line 10 of the same page it is, however, clear that R^2 can not be hydrogen. This has to be clarified.

Re Item VI

Certain documents cited

Certain published documents

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
WO2004/111256	23.12.2004	07.06.2004	19.06.2003

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/IB2005/000873